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<u>CLAIMS</u>

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- 1. (Currently amended) A method for quantitative determination of arsenic concentration in a water sample in the field, wherein the water sample comprises phosphates that have an order of magnitude or more higher concentration than the arsenic concentration, the method comprising:
 - (a) preparing a first and a second water sample aliquot;
- (b) adding a reducing agent to a the first water sample aliquot to reduce arsenic in the aliquot to an arsenite state, whereas the second water sample aliquot is unreduced;
- (c) adding a color reagent to the first and second sample aliquots, whereby phosphates in the first aliquot and both phosphates and arsenates in the second aliquot are converted into color complexes;
- (d) using optical probes to measure light absorbance of the color complexes formed in each aliquot; and
- (e) using the measured light absorbances for the two aliquots to ealeulate determine the arsenic concentration in the groundwater sample,

wherein the optical probes are disposed in a portable <u>battery-powered</u> colorimeter, and wherein the determination of the arsenic concentration has a detection limit of 10 µg/L or lower for groundwater samples having phosphate concentrations in the range of 5-50 µM.

2. (Original) The method of claim 1, further comprising the step of adding an oxidizing agent to the second sample aliquot to oxidize arsenic in the aliquot to an arsenate state.

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- 3. (Original) The method of claim 1 wherein the optical probe comprises infrared radiation having a wavelength of about 880 nm.
- 4. (Original) The method of claim 1 wherein the color complexes comprise molybdenum blue.
- 5. (Original) The method of claim 4 wherein the color reagent comprises potassium antimonyl tartrate, wherein the water sample is a groundwater sample, and wherein the proportion of color reagents added to groundwater sample aliquots is increased by about a factor of 10 over conventional Johnson and Pilson formulations used for seawater analysis.
- (Original) The method of claim 1 wherein an optical probe comprises:
 a cuvette to hold a sample aliquot;
 - a light emitting diode which is configured to radiate light on to the cuvette;
- a photodetector for measuring the intensity of light transmitted through the held sample aliquot; and

an electronic component to process the voltage output of the photo detector.

7. (Original) The method of claim 1 wherein using optical probes comprises using a pair of optical probes that are disposed in a dual-beam arrangement in the portable colorimeter, and using a first probe in the pair to measure light absorbance in the first sample aliquot, and the second probe in the pair to measure light absorbance in the second sample aliquot.

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- 8. (Original) The method of claim 7 wherein the responses of the optical probes in the pair are normalized with respect to each other.
- 9. (Original) The method of claim 1 wherein the light absorbance in the first and the second sample aliquots is measured sequentially.
- 10. (Original) The method of claim 1 wherein the light absorbance in the first and second sample aliquots is measured concurrently.
- 11. 18. (Cancelled).